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## 1 [Approximation algorithms for metric facility location and k-Median problems using the primal-dual schema and Lagrangian relaxation](#)



Kamal Jain, Vijay V. Vazirani

March 2001 **Journal of the ACM (JACM)**, Volume 48 Issue 2

Publisher: ACM Press

Full text available:  [pdf\(170.38 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We present approximation algorithms for the metric uncapacitated facility location problem and the metric k-median problem achieving guarantees of 3 and 6 respectively. The distinguishing feature of our algorithms is their low running time:  $O(m \log m)$  and  $O(m \log(L + \log(n)))$  respectively, where  $n$  and  $m$  are the total number of vertices and edges in the und ...

**Keywords:** k-median problem, Lagrangian relaxation, approximation algorithms, facility location problem, linear programming

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## 2 [Approximation algorithms for facility location problems \(extended abstract\)](#)



David B. Shmoys, Eva Tardos, Karen Aardal

May 1997 **Proceedings of the twenty-ninth annual ACM symposium on Theory of computing**

Publisher: ACM Press

Full text available:  [pdf\(1.52 MB\)](#)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

## 3 [Optimization: Facility location: distributed approximation](#)



Thomàs Moscibroda, Roger Wattenhofer

July 2005 **Proceedings of the twenty-fourth annual ACM SIGACT-SIGOPS symposium on Principles of distributed computing PODC '05**

Publisher: ACM Press

Full text available:  [pdf\(212.91 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this paper, we initiate the study of the approximability of the facility location problem in a distributed setting. In particular, we explore a trade-off between the amount of communication and the resulting approximation ratio. We give a distributed algorithm that, for every constant  $k$ , achieves an  $O($

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Terms used relaxation network round rounding

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## 1 Design of logical topologies: a linear formulation for wavelength-routed optical networks with no wavelength changers

Rajesh M. Krishnaswamy, Kumar N. Sivarajan

April 2001 **IEEE/ACM Transactions on Networking (TON)**, Volume 9 Issue 2

Publisher: IEEE Press

Full text available:  [pdf\(257.34 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)
**Keywords:** all-optical networks, linear program, network planning, topology design

## 2 Routing and wavelength assignment in optical networks

Asuman E. Ozdaglar, Dimitri P. Bertsekas

April 2003 **IEEE/ACM Transactions on Networking (TON)**, Volume 11 Issue 2

Publisher: IEEE Press

Full text available:  [pdf\(507.86 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The problem of routing and wavelength assignment (RWA) is critically important for increasing the efficiency of wavelength-routed all-optical networks. Given the physical network structure and the required connections, the RWA problem is to select a suitable path and wavelength among the many possible choices for each connection so that no two paths sharing a link are assigned the same wavelength. In work to date, this problem has been formulated as a difficult integer programming problem that d ...


**Keywords:** exact penalty functions, lightpath, linear programming, routing, wavelength assignment

## 3 Convex quadratic and semidefinite programming relaxations in scheduling

 Martin Skutella

March 2001 **Journal of the ACM (JACM)**, Volume 48 Issue 2

Publisher: ACM Press

Full text available:  [pdf\(374.96 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We consider the problem of scheduling unrelated parallel machines subject to release dates so as to minimize the total weighted completion time of jobs. The main contribution of this paper is a provably good convex quadratic programming relaxation of strongly polynomial size for this problem. The best previously known approximation algorithms are based on LP relaxations in time- or interval-indexed variables. Those LP relaxations, however, suffer from a huge number of variables. As a result ...

**Keywords:** approximation algorithms, convex optimization, performance guarantee,



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Terms used **relaxation network topology round rounding**

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Publisher: IEEE Press

Full text available:  pdf(257.34 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)
**Keywords:** all-optical networks, linear program, network planning, topology design

## 2 [Self-stabilizing topology maintenance protocols for high-speed networks](#)

Hosame Abu-Amara, Brian A. Coan, Shlomi Dolev, Arkady Kanevsky, Jennifer L. Welch

December 1996 **IEEE/ACM Transactions on Networking (TON)**, Volume 4 Issue 6

Publisher: IEEE Press

Full text available:  pdf(1.30 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

## 3 [Routing and wavelength assignment in optical networks](#)

Asuman E. Ozdaglar, Dimitri P. Bertsekas

April 2003 **IEEE/ACM Transactions on Networking (TON)**, Volume 11 Issue 2


Publisher: IEEE Press

Full text available:  pdf(507.86 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The problem of routing and wavelength assignment (RWA) is critically important for increasing the efficiency of wavelength-routed all-optical networks. Given the physical network structure and the required connections, the RWA problem is to select a suitable path and wavelength among the many possible choices for each connection so that no two paths sharing a link are assigned the same wavelength. In work to date, this problem has been formulated as a difficult integer programming problem that d ...

**Keywords:** exact penalty functions, lightpath, linear programming, routing, wavelength assignment

## 4 [Session 1: Self-stabilizing mutual exclusion using tokens in mobile ad hoc networks](#)

 Yu Chen, Jennifer L. Welch

September 2002 **Proceedings of the 6th international workshop on Discrete algorithms and methods for mobile computing and communications**

Publisher: ACM Press

Full text available:  pdf(214.98 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#),